moving said display list by computing movement from map reference point to an actual map center point;

translating and rotating geometry of said display list to present heading/north up views;

monitoring difference between the projected map center and actual map center to keep terrain covering said display screen; and

swapping new terrain skin.

REMARKS

In the Office Action dated October 23, 2002, claims 1 and 2 were rejected. Applicants have amended claims 1 and 2 and have added new claims 3-10. The amendments and new claims find full support in the claims and specification as filed. Claims 1-10 remain pending.

As set forth in greater detail below, Applicants respectfully submit that the pending claims are patentable over all of the prior art of record. Accordingly, reconsideration of the application in light of the amended claims and the following remarks is respectfully requested.

Objections

The Office objected to the drawings as failing to comply with 37 CFR 1.84(p)(4) because reference character "410" was inadvertently used to designate both a current heading indicator (page 10, line 10) as a line extending from the aircraft, and an unknown element in the upper left corner of the cylinder. Applicants submit herewith a substitute set of formal drawings, which have been amended to correct the inadvertent and redundant reference to numeral "410." This correction to the drawing does not add new subject matter and is consistent with the description in the specification at page 10, line 10. Accordingly, Applicants submit that this objection has been obviated and respectfully request the withdrawal of this objection.

The Office objected to the disclosure at page 10, line 12 because the second "to" should be "top" and at page 10, line 28 because the (') symbol should be (°). The specification has been amended, as suggested by the Office. Accordingly, Applicants request the withdrawal of this objection.

Rejections:

35 U.S.C. § 112, Second Paragraph Rejection

The Office rejected claim 2 under 35 U.S.C. § 112, second paragraph, as being indefinite for failure to particularly point out and distinctly claim the subject matter which Applicants regard as the invention. The Office asserts that claim 2 lacks sufficient antecedent basis for the

limitation "said aircraft." Applicants have amended claims 2 as suggested by the Office in order to more particularly point out and distinctly claim the subject matter which Applicants regard as their invention. Applicants submit that the § 112, second paragraph rejection has thus been obviated and, accordingly, respectfully request the withdrawal of this rejection.

Non-Statutory Double Patenting Rejection

The Office rejected claims 1 and 2 under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 8 and 19, respectively, of U.S. Patent No. 6,308,132 B1. The Office, however, noted that a timely filed terminal disclaimer in compliance with 37 C.F.R. § 1.321(c) may be used to overcome the above-referenced claim rejections. Accordingly, a terminal disclaimer is enclosed herewith.

35 U.S.C. § 103 Rejection

Claim 1 is rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 5,920,276 to Frederick in view of U.S. Patent No. 5,596,500 to Sprague et al. Claim 2 is rejected under 35 U.S.C. § 103(a) as being unpatentable over Frederick in view of Sprague as applied to claim 1, and further in view of U.S. Patent No. 5,978,715 to Briffe et al.

1. The Cited Combinations of References Fail to Disclose Each and Every Element of Applicants Claims 1 and/or 2.

None of the cited references explicitly or inferentially teach, *inter alia*, in claim 1: the steps of "modifying said display database in accordance with avionics data associated with said aircraft," and "creating a projected display database;" and, in claim 2: a "display computer configured to . . . modify said display database in accordance with avionics data associated with an aircraft." These claimed elements are an essential and important aspect of the present invention. The Office Action cites the *Frederick* and *Sprague* patents in rejecting both claim 1 and claim 2.

Frederick is entitled "Automatic Horizontal and Vertical Scanning Radar with Terrain Display" and is generally directed to a display system for transmitting and receiving radar signals related to weather events, storing these signals and calculating the latitude and longitude coordinates of the locations from which the reflected radar signals were reflected and displaying (via superimposition) this weather data in conjunction with stored terrain elevation data. In short, *Frederick* is directed to no more than a system for overlaying weather data on stored terrain rendering. *Frederick*'s teaching is that the location of the weather data signals may be

determined and then presented on a display for viewing. Although the Office Action makes a tenuous connection between *Frederick*'s moving map generator and the claimed display database, it should be noted that even assuming arguendo that the moving map generator generates a form of display database, it is not "in accordance with avionics data associated with said aircraft" as required by the claim.

Sprague is entitled "Map Reading System for Indicating a User's Position on a Published Map with a Global Positioning System Receiver and a Database." *Sprague* is directed to the combination of a GPS receiver with a database of topographical information in order to plot a particular location on a displayed map. The claims of the present invention relate to more than just storage of data in a database, as suggested in the Office Action. Indeed, claim 1, as amended, requires the storage of navigational and flight planning data in the database and the use of this data in conjunction with a terrain display. *Sprague* is not even remotely related to use of avionics data and projection of said data on a display screen.

Briffe, which the Office has admitted is similar to *Frederick*, also fails to teach many of the elements of the pending claims, including the teaching of a CCD that is integrated into a display system for displaying overlaid navigational data on a terrain map.

In view of the foregoing comments, the pending claims should be allowed because none of the cited references, alone or combined in the manner stated in the Office Action, teach Applicants' claimed invention.

2. No Reasonable Basis for Combining the Cited References has been Presented, Nor Does a Basis Exist in the Prior Art Cited

It is well-settled that the Office bears the burden of setting forth a detailed evidentiary basis for the teaching, suggestion or motivation to combine the cited references. As recently stated by the Federal Circuit, the factual inquiry of whether to combine references must be thorough and searching, and must be based upon objective evidence of record. In re Sang Su Lee, 277 F.3d 1338, 1343 (Fed. Cir. 2002). While the suggestion for the combination need not emanate from the references themselves, the Office must set forth in detail its findings and the grounds for the findings, as supported by the agency record, and must explain its application of law to the found facts. No such evidence or explanation is provided in the Office Action, nor is such a suggestion available without impermissible hindsight and the benefit of Applicant's claims. Notably, even if the three references cited in the Office Action, independently teach

various facets of the presently claimed invention, these references are not in analogous art and would not be readily looked to by someone in the avionics industry. For example, Frederick is directed to the problem of rendering weather data on a map, whereas Sprague is directed to the problem of using a GPS system in conjunction with stored map data to plot data points.

CONCLUSION

In view of the foregoing, Applicant respectfully submits that all of the pending claims are allowable over the prior art of record. Reconsideration of the application and allowance of all pending claims are earnestly solicited. Should the Examiner wish to discuss any of the above in greater detail or deem that further amendments should be made to improve the form of the claims, the Examiner is invited to telephone the undersigned at the Examiner's convenience.

Dated: 1/23/03

Respectfully submitted,

By: _____

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VERSION WITH MARKINGS TO SHOW CHANGES MADE

In the Drawing Figures:

Enclosed herewith is a submission of substitute drawings, with the redundant numeral 410, as identified by the Office, redacted.

In the Specification:

Paragraph at page 10, line 12 with the following rewritten paragraph:

> Referring momentarily to Fig. 4, a display in accordance with one aspect of the present invention includes a range-cylinder display 400. Range-cylinder display 400 suitably comprises a perspective range ring 402, heading tick-marks and bug 404, and an aircraft symbol 406. A color difference is preferably displayed between the top 1000 feet (or other appropriate distance) 408 of the range cylinder, and the top of the cylinder preferably corresponds to the projected altitude at the displayed range. A current heading indicator 410 is also included in the illustrated embodiment. Spoke symbols may also be displayed from the aircraft to the top of the range ring. The cylinder and spoke symbols preferably disappear into the terrain where the terrain geometry occludes them, visually depicting possible terrain collisions. This display effectively provides a conformal terrain presentation with visual situational awareness of terrain conflicts.

Replace the paragraph beginning on page 10, line 27 with the following rewritten paragraph:

> In one embodiment, lines of latitude and longitude will be displayed at the rate of one line for every 30[']° of arc. The numerical values will be written along the lines near the line intersections.

In the claims:

1. (Once Amended) A method for navigational data associated with an aircraft, said method comprising the steps of:

providing a database including navigational and flight planning data;

projecting and culling said database in real time in accordance with a defined map region;

creating a projected display database;

modifying said display database in accordance with avionics data associated with said aircraft;

displaying said display database in accordance with said modifying step.

2. (Once Amended) A display system comprising:

a cursor control device (CCD) configured to accept input from a user;

a display computer coupled to said CCD and configured to process avionics data and said input from said user, wherein said display computer is further coupled to a display and at least one database including navigational data;

said display computer further configured to:

project and cull said database in accordance with a defined map region;

create a projected display database;

modify said display database in accordance with avionics data associated with an [said] aircraft; and

display said display database in accordance with said modifying step.

3. (New) The method of claim 1, further comprising the step of unifying map and plan mode presentations into a virtual map.

4. (New) The method of claim 1, further comprising the step of simultaneously displaying at least two profiles.

5. (New) The method of claim 1, further comprising the step of displaying a map from a variable perspective, wherein the angle of incidence between a pilot's view and earth's surface is set at an angle of less than ninety degrees.

6. (New) The system of claim 2, wherein the display computer is configured to display a map from a variable perspective.

7. (New) The system of claim 2, further comprising a map of layered information, wherein said layers are controllable via graphical interfaces.

8. (New) The system of claim 2, wherein said CCD is a graphical user interface.

9. (New) The system of claim 2, wherein said display is configured to display flight plan transitions as curved paths from one flight leg to the next.

10. (New) A method of terrain paging comprising the steps of:

computing the size of a terrain patch to cover a display screen;

creating triangular vertices by projecting sampled vertices from latitude and longitude coordinate frame to a nautical mile based coordinate frame;

setting said triangular vertices at their correct elevation to form terrain skin;

rendering terrain skin to a display list;

moving said display list by computing movement from map reference point to an actual map center point;

translating and rotating geometry of said display list to present heading/north up views;

monitoring difference between the projected map center and actual map center to keep terrain covering said display screen; and

swapping new terrain skin.